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THE
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☞See advertisement on last page.

Poetry.

NATURE'S NOBILITY.

Room for a nobleman to pass!
In costly robes? in trappings gay?
A fop tricked out before the glass?
No! clad in sober grey,
A nobleman in heart is he,
With mind for his nobility.

His crest a soul in virtue strong,
His arms a heart with honor bright:
Which gold bribes not to what is wrong,
Nor blinds to what is right;
The patent of his courtly race—
Behold it in his open face.

He cringes not on those above,
Nor tramples on the worm below;
Misfortune cannot cool his love,
Or flattery make it grow;
Staunch to his friends in woe or weal,
As is the magnet to the steel.

He envies not the deepest sage:
He scoffs not at the meanest wight.
And all the war that he doth wage
Is in the cause of right:
For broad estate and waving land,
He has the poor man's willing hand.

He is not rich, and yet, indeed,
Has wealth: nor poor, his stock though small,
Not rich: he gives so much to need.
Not poor, for on him fall
Such blessings from relieved distress,
To crown his path with happiness.

Room for a lord, ye truckling crew
Who round earth's great one's fawn and wind,
Fall back! and gaze on something new—
A lord, at least in mind—
That bravest work in nature's plan,
An upright independent Man!

WHO SAYS DESPAIR?

BY C. D. STUART.

Who says despair? The Earth is wide
As when the first man walked abroad,
When all things living owned him lord—
Himself but subject unto God.

The Earth has lost no tint of green,
The Sun still smiles from out the skies
And all the flowers are fair, as when
The wind first breathed on Paradise.

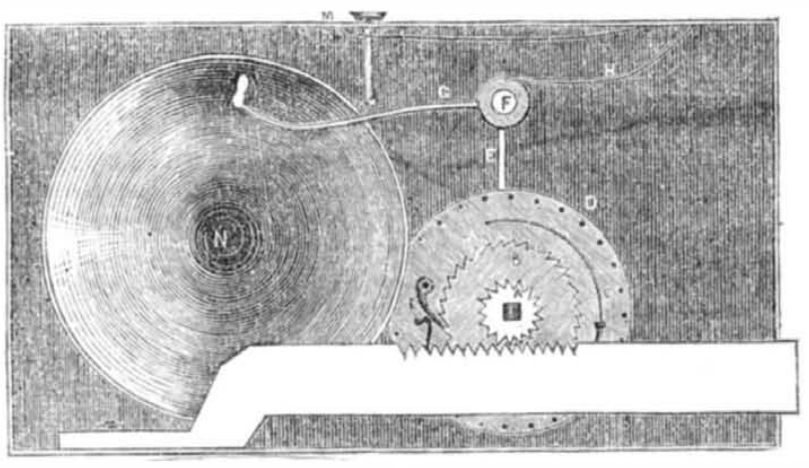
The months and years roll on the same,
And from the bosom of the soil
Spring all things fresh and beautiful,
Obedient to the hand of Toil.

Who says despair, hath faith nor will;
He shuts his eye, he shuts his hand,
And will not reap what God has spread
Lavish and fair in every land.

Who says despair, hath coward heart;
He will not drive the ox, nor hold
The plow, nor thrust his sickle round
Sheafs that are brighter far than gold.

Who says despair, let him go forth
And plant the seed that groans for birth
And he shall find his garden fair
As the first Paradise of Earth.

ALARM LOCK.



This is an invention of Mr. Wm. E. Hurlbut and Levi R. Wildman, of Danbury, Fairfield Co., Connecticut. The principle of it is the simple combination of a bell or gong with a lock, so as to strike the bell and make an alarm by turning back the bolt with a key to open the door. No other peculiarity about the lock is claimed but this.

DESCRIPTION —N, is a shield or bell, and G, is an arm with a hammer to strike. This hammer is attached to F, a roller on a centre, kept in its proper place by a bridle spring H. E, is a suspended rod attached to F. to operate G, and strike the bell when the bolt is turned back, (unlocked.) This is done in the following described manner. A small axle like those in common use is attached to the lock plate, and has a pinion A, on its interior end which meshes into notches on the bolt to slide it backwards and forwards by turning the axle with the key. To prevent the bolt from being pushed easily backwards, a pall K, is also fixed upon the axle working into a rack shield or plate B, and this pall is kept in its proper place by C, a spring, so that (as will readily be observed) a force is thus to be applied for unlocking sufficient to strike E, by a number of small *studs* or pins in D, another shield on the axle. The bell is thus struck once for every notch on the bolt passed over by the pinion in the act of unlocking, It will also be perceived, that from the shape of the rack shield B, and the action of the pall K, thereon, that no force will be exerted in the proper direction to strike E, by the locking of the door—in other words, driving out the bolt from the lock box by the key operating the pinion. M, is a slide rod to throw G out of gear with the bell when required.

There are other modes of mechanical arrangement whereby the same end could be attained as that displayed in the above engraving, but we do not see where there could be much greater simplicity. If F, was a barrel spring, the bell might be operated without the use of H, the bridle spring—but the expence of this lock is no more than those in use and can be applied to the common lock, therefore no improvement for cheapness, the thing most commonly sought after, in our opinion could be effected. The improvement will no doubt be soon applied to almost every lock that is manufactured. Measures have been taken to secure a patent.

Cotton.

In 1784, now only 64 years since, an American vessel, having eighty bales of cotton on board, was seized at Liverpool, on the plea that so large an amount of cotton could not have been produced in the United States. In 1785, the shipment amounted to 14 bales; in 1786, to 56 bales; in 1787, to 109; 1788, to 389; in 1789, to 842. In "Norman's New-Orleans and Environs." we read the following anecdote: "An old Carolina planter, having gathered his crop of five acres, was so surprised and alarmed at the immense amount they yielded, which was fifteen bales, that he exclaimed 'well well—I have done with cotton—here is enough to make stockings for all the people in America." How many stockings would the crop of 1847 make, which will in all probability number about 2,250,000 bales.

Employment for Children.

A source of much unhappiness to children and of trouble to parents, especially mothers, is the want of employment for the young members of the family at home. Half the scolding and punishment and mischief, which form no inconsiderable portion of the every-day history of some house-holds, could be avoided, if the young and restless subjects of discipline were furnished with some occupation. It is as irksome for the faculties of an active child to have nothing to do, as it is for those of an active adult, and it is natural that a child left without any diversion should resort to devices to pass away the time which the parent calls mischievous and annoying. Many a poor infant is hurried to school long before it should be required to suffer such confinement and restraint, merely to put it out of the way as a domestic nuisance. Many more have their activity and sprightliness repressed, by parental tyranny, which compels them to sit motionless, or to move about with the caution of an intruding cat, lest an unwary sound or movement should consign them to the bed or corner

Hard Times.

Boys have an unfair time of it in this world. They get the drumsticks of the turkey for dinner, and have to wait for the hot cakes at breakfast till every body else is supplied; they are snubbed when they are in spirits and told not to make such a racket; they are sent off to bed just in the sweet edge of the evening, when it is so nice to sit by the fire and tell stories; in a thousand ways they are put upon and robbed of their natural rights

The Female Dress.

A woman should always look as soft to the touch as a flower, and as pure. All her garments should be made of the finest and softest material possible, material that will easily dispose into folds, falling gracefully around her; and not, by being liable to ruffle it every moment, compel her to stiff attitudes and starched demeanor, denying her all luxury of lounge and loll.

No lady should depend on flour or potatoes for propriety.

RAIL ROAD NEWS.

An act regulating the Railroads of Ohio, pased the legislature of that State, and also laws for the Cleveland and Pittsburgh, Akron, and Pittsburgh, Cleveland, and Mahoning, (to end at Pittshurgh,) the Ohio and the Pennsylvania, and the Wellsville and Pittsburg Railroads; all of which are to end at Pittsburgh, and by their junction there, with the Pennsylvania Railroad, will vastly augment the trade and travel of the Ohio roads.

Cleveland and Cincinnati Railroad.

The people of Cleveland are making active exertions to finish their link to Columbus, and thus Cincinnati has a good prospect of having two lines of Railroad completed to the Lake, in two years—one terminating at Sandusky, the other at Cleveland.

Chicago Railroads.

The Chicago Journal says that the contracts for grading and bridging of the first thirty-nine miles of the Chicago and Galena Union Railroad are already made, and adds, that we should not be surprised if we found ourselves riding out some ten or fifteen miles towards Galena on this track, about the 4th July next.

Frankfort and Lexington Railroad.

An act of the last General Assembly of Kentucky provides for the renovation of the Frankfort and Lexington Railroad. The capital stock of the new company is $450,000; the State puts in the present road one third of that sum and becomes a stockholder to that amount. 300,000 dollars will remain to be subscribed and paid by individuals and the Corporations of Frankfort and Lexington; and the amount, when raised, will be sufficient to reconstruct the road, lay down a T or U rail, and change the location so as to avoid the inclined plane, and make the terminus on the bank of the river, instead of the brow of the hill as at present.

Ogdensburg and Champlain Railroad.

The whole line of the northern road from Ogdensburgh to Champlain is now in the hands of efficient contractors. Six thousand tons of rails have been purchased, to be delivered before the first of October next, and the timber for ties, fences, &c. Ten first class engines have been contracted for. Sixty miles of the road will be ready for the rails the early part of next autumn.

Oregon Railroad.

The House of Representatives at Washington has adopted a resolution for the appointment of a select Committee to take into consideration the proposition of a railroad from Lake Michigan to the Pacific, as proposed by Mr. Asa. Whitney. Eighteen States have through their legislatures, adopted resolutions approving the project.

The New London Star States that the sum of 322,000 dollars has been subscribed by the citizens of that place to the New London and Willimantic Rail Road.

Telegraphing.

A Bill has passed the Legislature of Nova Scotia, empowering the executive to lay down a line at once from Halifax to our Northern Frontier, along the main Post Road, at a cost of twenty-eight hundred pounds, keeping the control of the communications through the Provinces in the hands of Government, but leaving the Governor free to enter into any fair arrangements, either with the Governments of New Brunswick, and Canada, or with private Companies, for the extension of the communications, either with the Far West, through Quebec, or with St. John or the other Cities lying along the sea-board of the Provinces, which again, it is but fair to assume, will be speedily brought into connection by Telegraph, with the chief commercial cities of the Union.

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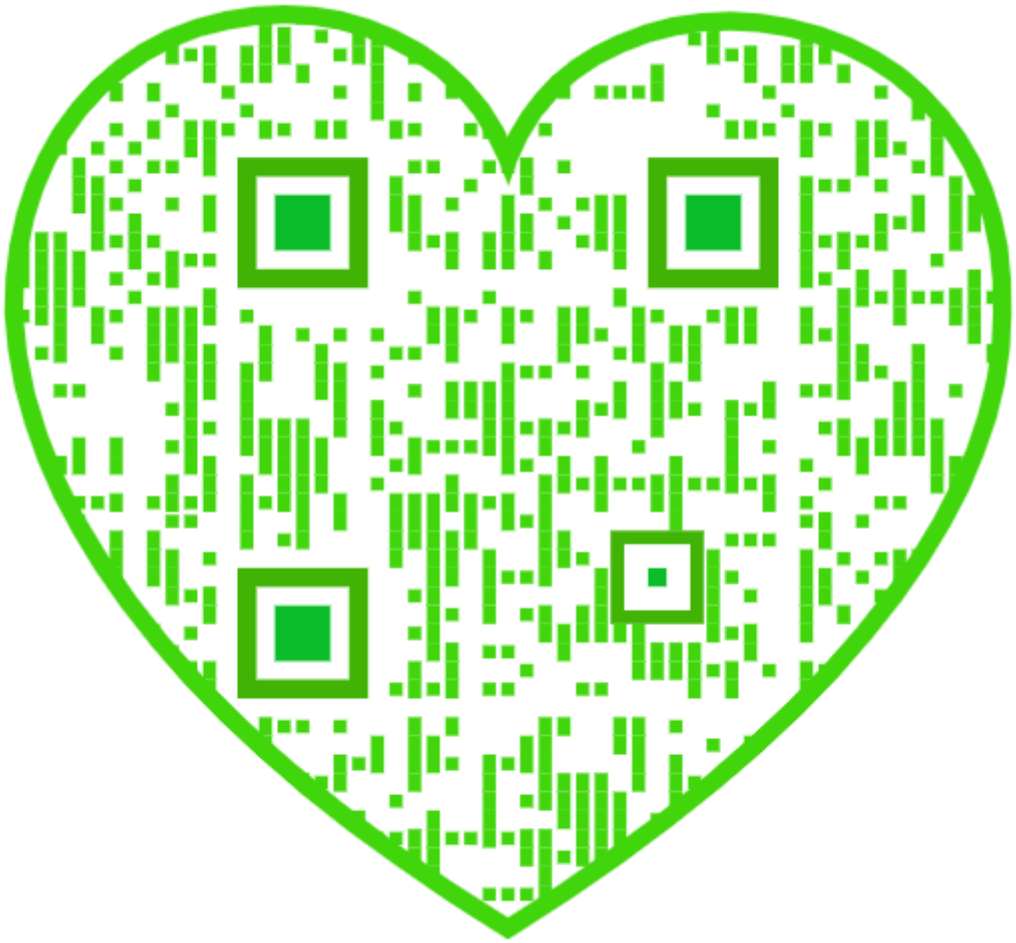

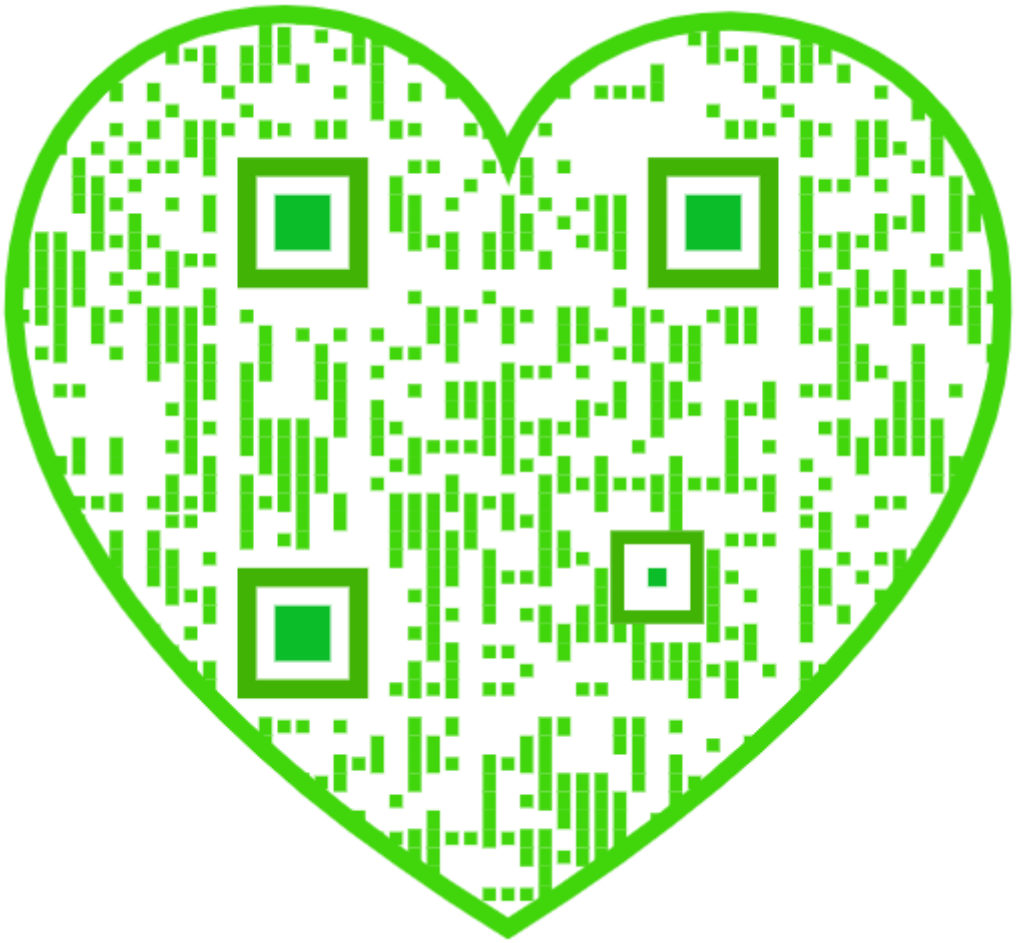

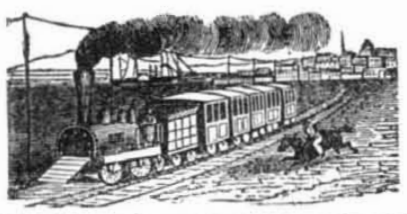

Factory Labor.

The Senate and House of Representatives of Pennsylvania have passed the following law:—"Be it enacted that labor performed during a period of ten hours in any secular day, in all cotton, woolen, silk, paper, bagging, and flax factories, shall be considered a legal day's work, and that hereafter no minor or adult engaged in any such factories shall be holden or required to work more than ten hours in any secular day, or sixty hours in any secular week, and that after the fourth day of July, of the present year, no minor shall be admitted as a worker, under the age of twelve years in any cotton, woolen, silk or flax factory, within this commonwealth; that if any owner or employer in any such factories aforesaid, shall employ any such minor, he shall be adjudged to pay a penalty of fifty dollars, one-half to the party so employed, and the other half to the Commonwealth, to be recovered in like manner as debts of like amount are now recovered by law. *Provided* That nothing contained in this act shall be construed to prevent minors above the age of fourteen years from being employed more than ten hours in any day, if the same be done by special contract with their parents or guardians.

A Good offer to Emigrants.

The Government of New Grenada, South America, offers to every person who will settle there as much land as he chooses to cultivate for himself and family,—protection in the exercise of his religious faith, whatever that faith may be—exemption from all taxations for twenty years—freedom from every species of military service—repayment by the government of the expense incurred in his emigration to New Grenada, and admission from the moment he occupies the land to all the rights and immunities of any of its citizens.

Full protection and every encouragement is offered to all industrious Americans who desire to become cultivators of the soil of that Republic. New Granada is in advance of many more powerful nations, in seeking to illure and establish within her borders a hardy and industrious yeomanry. This is the very policy England should pursue were she wise for her own interests.

Florida Oranges.

The Tallahasse Journal states that a new and formidable enemy has just made its appearance in the orange groves in that State. An insect of the smallest, most minute class, fastens itself upon the tree; in endless numbers they spread themselves over all the surface of the stem, the branches, the young shoots, and foliage of the tree, till certainly, though slowly, it withers and decays. Tree after tree—extensive groves have already been destroyed. And still the little and seemingly contemptible enemy is carrying on his work of destruction, with accumulating force. There are very few trees in that section of Florida, it is said on which, he has not already commenced his attacks. No remedy for this new evil has as yet been suggested.

The Propellor Sarah Sands.

This propellor packet ship made a rapid passage to England from this port, on her last voyage, 13 days and 22 hours. This is said to be a fair test of her machinery and sailing qualities. The Sarah Sands is an iron ship, of light and beautiful dimensions, and a powerful propellor. It is our opinion that the screw has not been fairly tested. The great and superior speed of paddle steamboats is not the result of a few years experience, and were the screw to be as long tested to detect imperfections and apply proper remedies, we have no doubt but that extra *houses* on the sides of steamboats would be unknown.

The debt of France amounts to 1,045,000,000 dollars.

The Arctic Expedition.

Two expeditions have been fitted out by the British Government to go in search of Sir John Franklin, the celebrated navigator, and Lady Franklin offers a reward of three thousand pounds to whalers that will assist in the search.

The British Government has with an infatuation that must excite admiration, endeavored to find a North West Passage to the Pacific. Hitherto all attempts have failed. But suppose they would discover such a passage, what better would the world be for it, as long as no confidence could be placed in its being always open? What merchant navigator would risk the safe but long passage by the Cape to the short but perilous passage through the midst of crashing icebergs and freezing tempests? While we must admire the heroism that has been exhibited in Polar expeditions, we cannot but think that the results have been dross in exchange for gold.

Iron in Architecture.

For a long time the attention of architects and builders has been directed to iron as a material for building. Hitherto the price of iron has been an object. But recent improvements made in the process of manufacturing has had a tendency to reduce the cost of this imperishable article. The very great reduction which iron has undergone within a few months will suggest its increased use for architectural purposes. It is susceptible of very great variety of pattern, affording a wide field for designing.

Iron blinds and fronts are now becoming not uncommon in our city, and they look both chaste and elegant, while at the same time they are the most durable and safe.

Remarkable Case.

It will be recollected that some time since, we noticed a very remarkable case of abdominal dropsy, which came under the observation and treatment of Dr. J. B. Henshaw, of Coxackie in this State, the patient having at that time underwent the operation of tapping some forty-five times.—Strange as it may appear, it is nevertheless a fact, that the same patient is still alive, and in very good general health. He has now undergone the operation 108 times, the quantity of water taken, averaging three gallons at each operation, making an aggregate of 326 gallons, or 2,692 pounds: and notwithstanding this, he is at present able to walk about town and transact his business.

Important Discovery.

The New Orleans Delta says; Mr. Davison formerly an associate of Dr. Lardner in Scientific research, has made a very valuable discovery. It is a mode or an apparatus by which meat can be cured at all seasons and in all climates By this process any person can cure meat thoroughly in three hours, in the warmest weather. Some three or four hundred barrels of beaf thus cured, have been shipped from Houston, Texas, for New York, and some specimens of the same are now in New Orleans market, consisting of 11 barrels of beef, at the store of Messrs. Barnley, Doswell, & Co. This will prove a valuable discovery for the South, and will render her entirely independant of the North and West, for her supply of salt meat.

Lumber.

Large quantities of lumber have arrived, from the lumber regions up the Alleghany. The shore of the Alleghany is crowded with it almost as far as the eye can reach. If we continue to be distressed, says a Pittsburgh paper, with the destruction of buildings by fire, as we have been of late, lumber will be in good demand for some time to come.

An Emperor and Mechanic.

While Napoleon was on the throne a poor American came to Paris. He had an invention which he wished to show the Emperor. Napoleon paid little attention to it, and he went away. That was Robert Fulton, whose invention of the steamboat has changed the whole face of the world; who is this day bringing the ends of the earth together; and who has done more for the solid happiness of mankind than fifty Buonapartes. An account of this is to be found in Allison.

Practical Knowledge.

The interesting and highly useful articles on manufactures which appear weekly in our columns are prepared expressly for the Scientific American by two of the best practical manufacturers in this country. Mr. Gilroy is extensively known as author of the best publications on manufacturing ever published, and Mr. Montgomery, as a thorough practical mechanic and agent for one of the most flourishing manufacturing establishments in this State.

The Power of Water.

Let a strong small iron tube of thirty feet in height be inserted into the bunghole of a cask; and the aperture round so strongly closed that it shall be water tight; pour water into the cask till it is full, through the pipe; also continue filling the pipe till the cask bursts, which will be when the water is within a foot of the top of the tube. In this experiment the water, on bursting the vessel, will fly about with considerable violence.

Singular Death.

Mr. Joseph L. Ritchie, proprietor of an extensive vinegar establishment in Philadelphia, was awakened on Monday morning last, by cries and groans in the premises. He instantly rose, and on searching his vats found a colored man in one of them. In endeavoring to assist the unfortunate man out, being stifled with the noxious effluvia, or gas, rising from the liquid, himself fell in, and in that situation both perished

Useful Article.

At a meeting of the Liverpool Polytechnic Society, in the course of a conversation on the qualities of gutta percha, it was suggested that if valuable pictures were backed with a thin coating of gutta percha, it would enable them, in a great measure, to resist the influence of the atmosphere, aud render them all but imperishable.

To Make Furniture Paste.

Scrape four ounces of bees-wax into a pot, or basin, then add as much spirits of turpentine, as will moisten it through, at the same time powder one quarter of an ounce of resin and when it is dissolved to the consistency of paste, add as much Indian red as will bring it to a deep mahogany color; stir it up and it is fit for use.

A New Play.

Fifteen young men who had been employed in the Naumkeag Steam Cotton Mill, says the Salem Chronicle, and who were among the best hands in the establishment, have been discharged because they took the liberty of getting up a dramatic exhibition for their own amusement! This was done, too, without informing the young men, that the management of the mill disapproved of their proceedings.

A King's Liabilities.

The Paris correspondent of the London Atlas says that Louis Philippe has quitted the country leaving behind him debts to the moderate amount of twenty five millions of francs, his custom being to pay his creditors but once in five years. It is the third year which is now elapsing. Some of his debtor's must come over when he gets here, and sue him, that's all.

The Benefit of Music.

The more we have of good instruments, the better; for all my little children, not excepting my youngest daughter, learn to play, and are preparing to fill my house with harmony against all events so that, if we have worse times, we may have better spirits.—*Bishop Berkeley.*

Lip Salve.

This is made by simmering together equal quantities of deception, and soft soap, with a portion of essence of tin. Pour in of tincture of humbug, a few drops, to flavor it, and strain it through a cant sieve. It is excellent to correct crudities of speech.

Violet Metal.

Melt three pounds of copper with one of the regulus of antimony. It is brittle, of a violet color and takes a fine polish. The copper is melted first.

The Western Art Union at Cincinnati, contains 116 paintings and 10 pieces of statuary. Among the paintings are the four composing Cole's celebrated series of the Voyage of Life, and five others from his pencil; several of Doughty, Landseer, Durand, Sully, Titian, Peale and Copley's.

A bill has passed the Senate of this State for a Rail road from Auburn to Ithaca, also a bill to preserve a fair competition between the Troy and Schenectady, and the Albany and Schenectady Railroads.

A wealthy land proprietor of Paris, recently deceased, has left 1,500,000 francs for the establishment of a beneficial institution for the relief of indigent literary persons.

A recent attempt at boring for water in Venice has proved a total failure, and has been completely abandoned, with a net loss to the French company who undertook it of three or four hundred thousand francs.

An opposition line of Telegraph from New York to Boston is proposed, to be managed by Henry O'Reilly. We understand that the merchants of Boston have taken the subject in hand.

M. Guizot and family have, as Protestants, joined the French Protestant Presbyterian church in St. Martin's le Grand, London.—Madame Guizot, the venerable mother of the ex-minister, attends the service.

The Apprentices' Library, of Philadelphia has a female department which is said to be very useful. During the past year 7,648 books, have been loaned to females, of whom 250 now use the library.

An American gentleman has offered to build a bridge across the river at St. Johns, New Brunswick, and asks no assistance nor any one to take stock till the bridge is finished.

The Mayor of Boston, in England, has declared his determination to preside at no public dinner where drinking customs are permitted.

The ship building business is carried on with great spirit in Milwaukie. Some of the new vessels, it is said, are intended to come round by the Canada canals to the Atlantic.

A captain of a vessel, from Constantinople to Wexford, and several of the crew, died from eating pork that was preserved in a leaden cistern.

A well at Mondrof is 2,200 feet deep, it is said to be the deepest in the whole world. The well of Greenville, Paris, is 1794 feet deep.

The New York Insulating Company, No. 268 Broome St., are covering twisted telegraph wire with Gutta Percha, thus protecting it from the atmosphere and being chaffed.

By the Boston Daily Mail we are informed of a recent important decision in regard to Woodworth's Patent, which we shall notice more at length next week.

The Steamship Great Britain is now for sale at Liverpool. Her repairs and the expences to get her off, cost more than a hundred thousand dollars.

It has been said that any lawyer who writes so clearly as to be intelligible, is an enemy to his profession.

Dr. Coolidge, under sentence of death in the Maine State Prison, has been set to learn the trade of a shoemaker.

"We praise men for fighting," says a caustic writer, "and punish children for doing the same."

The magnetto electric telegraph improvement said to be invented by Messrs. Zook and Barnes, of Louisville, Ky., has not yet proved successful.

One hundred and fifty millions of dollars are invested in the Railways of France, a great part of this came fron. England.

The Homœphatic College in Philadelphia, has now been authorised by the Legislature to grant diplomas.

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Speed of Drums.

RULE.—Multiply the diameter of the driver, by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the revolutions of the driven.

QUESTION 1.—The driver is 8 inches, making 100 revolutions per minute; the driven is 5 inches—how many revolutions will it make?

Diameter of the driver, 8 inches
Multiply by No. of revolutions 100

Div. by diameter of driven, 5)800

Answer, 160 revolutions.

The diameter, and revolutions of the driver given, to find the diameter of the driven, that shall make any given number of revolutions in the same time.

RULE —Multiply the diameter of the driver by the number of revolutions, and divide the product by the revolutions of the driven, the quotient is the diameter of the driven.

QUESTION 1.—The diameter of the driven is 12 inches, making 100 revolutions; required the diameter of driven that shall make 200 revolutions?

Diameter of the driver 12 inches
Its number of revolutions, 100

Div. by No. of rev. of driven, 200)1200

Answer, 6 in. dia.

To alter the Driver Pulley.

RULE.—Multiply the diameter of the driven, by the number of revolutions that you wish it to make, and divide the product by the revolutions of the driver, the quotient is the diameter of the driver.

QUESTION 1.—Suppose you have an 8 inch pulley, which you wish to have driven 250 revolutions per minute; what must be the diameter of the driver that makes 100 revolutions?

Diameter of the pulley, 8 inches
Mul. by No. of revolutions, 250

Div. by No. of rev. of driver, 100)2000

Answer, 20 in. dia.

Galloway's Rotary Engine.

Elijah Galloway has brought out another rotary engine in England, which on the whole has been represented to have done admirably as a blower for a furnace at Mr. Tyrell's foundry at Deptford. It is a four horse power and does not occupy more space than a small hat box. The stroke does not traverse more than nine inches of space by four inches in diameter, and the whole weight is about two and a half cwt. The Railway Chronicle says that "the interior of the box consists of five segments of circles of highly polished steel, so arranged that the pistons or acting arms (also highly polished) bear on each other so as to secure steam tight contact without packing." The steam pipe from the boiler brings the steam into the box which surrounds the machinery described and by acting upon the arms turn a crank that works the valves, and this is all the machinery necessary. It makes 400 revolutions a minute and travels through as much space each stroke as the reciprocating engine with the same expense of fuel (We doubt this. It is too good news to be true.) This engine has been in operation some time and has been severely tested, according to the Chronicle, yet it is stated that it has been supplied with steam from a ten horse power boiler at Deptford, from which we must conclude that the *economy* of fuel is *fully* as much *guess* work as if Brother Jonathan was heating the poker. The inventor, however, is we believe more intimately acquainted with the rotary engine than any other living engineer.

Ærial Locomotion.

Mr. E. Newton, of Middlesex, England, has secured a patent there for an invention of Dr. Van Hecks, of Brussels, Belgium, which is going to beat railroad and steamboat locomotion clear out of the field. The mountains will no more need to be levelled nor the rivers unsnagged. Van Hecks will lay them all upon the shelf. The Doctor states that the whole difficulty in *ærial* navigation heretofore has been the various currents in the atmosphere "presenting an insuperable difficulty to balloon navigation. The whole of *ærial* flights have depended upon gas and ballast —out with the ballast to ascend and out with gas to descend." These difficulties are all splendidly surmounted in the Doctor's own way of reasoning. He uses a frame in combination with his balloon and which has vanes or sails upon it that can be worked by wheels driven by a crank, so that whenever he gets into a cross (angry it should be) current of air, all that has to be done, is to go to work might and main and weather the storm of the atmosphere like a steamer in a squall—with this one advantage that he navigates upwards till he gets a favorable current—a fair wind—and then he douses his crank and lowers studding sails, trusting alone then to his *maintop*.

The Effect of City Atmosphere Upon Stone.

Stone buildings decay more rapidly in cities than in the open country, where dense smoke, fogs and vapors, which act injuriously on buildings do not exist. There is also another curious cause which contributes to the durability of stone buildings situated in the country. In the course of time, the stone becomes covered with minute lichens, which, though in themselves decomposing agents, act with extreme slowness, and when once established over the entire surface of the stone, seem to exercise a protective influence by defending the surface from the more violent destructive agents, whereas, in populous smoky towns, these lichens are prevented from forming, and thus the stone is exposed to severer trials, than stone of the same kind situated in the country.

As a remarkable illustration of the difference in the degree of durability in the same material, subjected to the effects of the air in city or country, the appearance is noticed of several frusta of columns, and other blocks of stone, that were quarried at the time of the erection of St. Paul's Cathedral, London, and which are now lying in the isle of Portland, near the quarries from whence they were obtained.—These blocks are invariably found to be covered with lichens, and, although they have been exposed to all the vicissitudes of a marine atmosphere for more than one hundred and fifty years, they still exhibit beneath the lichens their original form, even to the marks of the chisel employed upon them; whilst the stone which was taken from the same quarries, (selected no doubt with equal, if not greater care than the blocks alluded to,) and placed in the Cathedral itself, is, in those parts which are exposed to the south and south-west winds, found in some instances to be fast mouldering away.

The New Telegraphic Instrument.

The Louisville Journal says: "We had the pleasure yesterday of seeing the new telegraphic instrument, invented by Messrs. Barnes and Zook, late of the Cincinnati Telegraph Office. It seemed to us beautiful in its simplicity and in its perfect adaptness to the purpose for which it is designed. It certainly works to admiration. It dispenses altogether with the receiving magnets, an achievement which has been deemed impossible.

This instrument is now using the dots and lines, but one of the inventors pointed out to us a mode in which he says that he can readily dispense with them. We are too little acquainted with the matter to be able to judge of the feasability of his plan.

The instrument, we are confident, cannot fail to prove valuable. We take pride in it as an American invention. The country is proud of Prof. Morse, and we believe that it will be proud of Messrs. Barnes & Zook."

Caterpillars.

An English agriculturalist paper gives the following method of destroying caterpillars, which was accidentally discovered, and is practiced by a gardener near Glasgow. A piece of woolen rag had been blown by the wind into a currant bush, and when taken out was found covered with the leaf devouring insects. Taking the hint, he immediately placed pieces of woollen cloth in every bush in his garden, and found the next day that the caterpillars had universally taken to them for shelter. In this way he destroys many thousands every morning.

To Make Splendid Candles.

PARLOR CANDLES.—Melt slowly over a moderate fire in a well tinned copper kettle, seventy pounds of pure spermaceti, and to it add piecemeal, and during constant stirring, thirty pounds of best white wax. By increasing the proportion of wax to fifty pounds, the resulting compound is much more diaphanous. The candles moulded of this mixture are not of as lengthy durance as candles made from wax alone. These tapers are often tinted of various colors, rose, yellow, light blue, green, &c. For the red shade, carmine or Brazil wood, and alum are used. The yellow is made with gamboge, the blue with indigo, and the green with a mixture of yellow and blue. They are sometimes perfumed with essences, so that in being burned, they may dispense an agreeable aroma.

Experience has shown that a more transparent and elegant candle is made by adding only six and a half pounds of wax to one hundred pounds of pure dry sperm.

TRANSPARENT COMPOSITION CANDLES — To compose one hundred pounds of stock, take ninety pounds of spermaceti, five pounds of putrified mutton suet, and five ponnds wax, melt each separately over a water bath, and to the whole then mixed together, add two ounces cream of tartar, and two ounces alum in very fine powder, and whilst stirring it constantly raise the heat up to (176° F.,) then withdraw the fire and allow the mixture to rest until it has fallen to (140° F) When the impurities subside the clear liquid composition must be drawn off into clean pans. Of this cooled block, candles are made which not only look well, but burn well. The suet is in just such proportion as will be a benefit rather than an injury.

The products of these admixed ingredients is not equal in beauty to that by the preceding process, but its quality and good appearance is more than proportional to its cost, which is much less than the aforementioned composition.

To Remove Fruit Stains.

A writer in the Lehigh Register expresses himself as follows:—

"As the season for blossoms is close at hand we desire to communicate a singular fact, perhaps never publicly announced before, and which involves some questions not easily solved, and principles unexplained.

When fruit trees are in blossom: stains produced by fruit can be bleached out in a day or two, which could not have been removed by bleaching in the sun, without some chemical preparation.

When peach trees are in blossom, peach stains can be removed—when plumb trees are in blossom, plumb stains, and so on with any other fruit trees. If during the fruit season of 1847, any persons stained their clothing, and endeavored to remove the stains by bleaching, they found it a fruitless effort—if however, when the fruit is in blossom this spring, they will bleach for a day or two, the stains will be entirely removed. This seems so improbably, that it can scarcely be credited; to convince, it must be tried—if found to be true, we hope some of the chemical philosophers of our country will be enabled to give us the why and wherefore."

The why and wherefore is, that there is no why and wherefore about it.

Plums.

The *Curculio*.—In a recent letter of Mr. Longworth, to one of the daily papers in Cincinnati, he says that he has had but two crops of plums in thirty years, where his "trees were not set in a brick pavement, and that where this protection against the curculio has been adopted, he has not lost a crop from the ravages of this insect for eighteen years past. His plum trees are planted close to the house, where persons are constantly passing at the very time these insects are most destructive, and the brick pavements around the trees extend beyound the branches. Salt has had a fair trial in that vicinity, and has failed entirely."

Candid.

At a recent examination of Law Students at Rochester, the judge intimated that a majority of them were numbskulls, but to spare their feelings, he would admit them all to the bar.

Sewing Machine.

The Boston Cabinet gives an account of a sewing machine seen in New Hampshire, by Mr. Thomas Hunt, which appears to be a wonder indeed. It is represented to sew a foot in length of broadcloth in two minutes, putting in three times the number of stiches usually made in the same length. No lady on earth, nor man either, can do it with the same regularity. The finest cambric stitching appears coarse and unfinished when compared with the work of this machine. It matters not what is the form of the seam, straight, angular, or circular, it goes regularly along with its steady yet rapid pace, without being hindered by any change in the line of motion. The work is stronger and not as apt to rip as that performed by hand. It does all the work about a coat, pantaloons, vest, shirt, cloak, ladies' dresses. &c., except making the button holes, and sewing on the buttons. Two men and four girls will do more work with this machine, than thirty persons can without it A quarter horse power will drive more than fifty of them with ease. It is capable of making boots and shoes; also harnesses for horses, &c. It can be applied for the making of sails for ships. Indeed wherever a needle can work, it can work. It does its work so rapidly, regularly, and strongly, that it must come into extensive use. A machine for family use will not cost fifty dollars. Any girl of ten years of age can work it in the same way; and any person who can thread a needle, and turn a screw, may learn in ten minutes how to use it, and with it do more work in a day, than ten men can perform.

[Can this be the machine of E. Howe, of Cambridge, Mass., patented in 1846. We received a number of communications about Mr. Howe, from people who had wrote to Cambridge, and failed to get an answer.

Curious Apple.

An apple has been produced near Ticonderoga, having neither core nor seeds, by the following method. The experiment is worth repeating, as it may lead to important results:—"The top of a young tree was bent over and covered with earth, which took root The tree was then cut asunder, which stopped all connexion with the natural root of the tree, and, by sprouts which sprung from the top portion of the body, a regular top was formed, which produces this fine fruit—a beautiful red, good size, very pleasant table apple in the fall."

Not to be Beat.

A public dinner in Edinburgh had dwindled down to two guests, an Englishman and a Highland gentleman, who were each trying to prove the superiority of their native countries. Of course, as an argument of this kind, a Scotchman possesses, from constant practice, overwhelming advantages. The Highlander's logic was so good, that he beat his opponent on every point; at last the Englishman put a poser.

"You will," he said, "at least admit that England is larger in extent than Scotland?"

"Certainly not," was the confident reply. —"You see, sir, ours is a mountainous, yours is a flat country. Now, if all our hills were rolled out flat, we should beat you by hundreds of square miles"

Washington's Servant.

Altamont, the servant of Washington died at Washington, on the 22nd. of last month. He was a colored man and lived to the age of 94. He was proverbial for stern integrity and fidelity. When the revolution broke out Altamont was given to Col. George Washington, by his nephew, and was with his young master in all the leading battles in the south, ending with the siege of Yorktown.

Don't be In a Hurry to get Rich.

Gradual gains are the only natural gains; and they who are in haste to get rich, break through sound rules, fall into temptations, and distress of every sort, and generally fail of their object. There is no use in getting rich suddenly. The man who keeps his business under his control, and saves something every year is always rich. At any rate he possesses the highest enjoyment which riches are able to afford.

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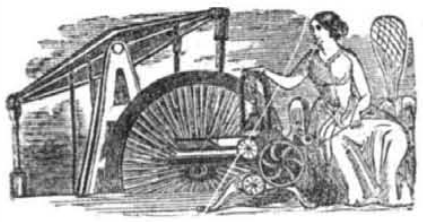


New Inventions.

Rotary Engine Propelled by Explosive Gases.

Mr. F. S. Ingersol, of Elyria, Ohio, has invented a very beautiful and simple rotary engine to be propelled in a most ingenious manner by powder. The charge is regulated by a screw and it is struck off by a percussion lock. The cavity for the receipt of the discharge is nicely fitted and perfectly removed when the charge is ignited from all connection with the magazine, so that there is no fear of explosions. The plan of the rotary engine, which we have seen, is very good in itself, and the manner of igniting and supplying the powder is certainly ingenious. The power of gunpowder or gun cotton as a mechanical propellant, has never yet been successfully developed. Brunell tried it, snd found that the changes of the atmosphere had such an effect upon the nitrogen that he had to abandon all attempts to use it with any benefit. When we take into consideration that a few grains of powder can propel a mass ten times its weight to a great distance and with a velocity so rapid that the eye cannot see it, (except large shot) we may wellconclude that were we capable of harnessing it with an engine the results would astound us. We hope Mr. Ingersoll, who is not a novice in invention, may be the fortunate man to accomplish this.

Improved Horse Rake.

Mr. Calvin Delano, of East Livermore, Maine, has invented a new and useful improvement in the Horse Rake. Each tooth is connected to a shaft by a hinge by which it is allowed to rise and fall easily and accommodate itself to uneven surfaces. The shaft is connected to a pair of small wagon wheels with a plattorm attached on which the driver stands, who by means of a bar running under the teeth in connection with an upright lever, lifts the teeth up and discharges the hay in winnows as the driver desires.

Permanent White Lead Paint.

Every person knows that white lead paint always turns yellow if not exposed to the rays of light. Nothing is more common in houses than to see behind shutters and in corners a dirty yellow where a white should be. This evil has been completely remedied by Mr. James Coppuck of Mount Holly, N. J., who has produced a matchless white, which has been nailed up for months in a close box and has retained all its pristine whiteness. The substance or substances he uses makes all the pigments nearly with which it is combined, exceedingly permanent. Some of these have now stood the test for years and with the inventor, Mr. Coppuck. it is no longer an experiment. Further information may be obtained of him, and we believe that a good opportunity is presented for those who may desire to engage in its introduction.

New Spark Arrester.

Messrs. Birch and Bruff, of Washington, D. C , the National Intelligencer says, has invented a very neat and simple hood for locomotives and steamboats, which increases the draught and and conveys the sparks, &c. into a receptacle, where they are effectually arrested and extinguished, not one being permitted to escape. The apparatus is substantial, permanent, and highly ornamental, and besides its above mentioned important functions, it projects the smoke higher above the train than the mere chimney would, without increasing its length. Numerous spark-catchers have been invented and several are in use, but none, it is believed, have proved perfect. The above invention cannot become easily deranged, and is as permanent a fixture as the chimney itself.

IMPROVEMENT IN VAULT COVERS.

It is a well known fact that our common vault covers are very inefficient and serve but poorly the purpose intended. We are sometimes afraid to step on one from the danger of its pringing up, as has been the case with many, and not withoutsome serious accidents. The city of New York, at least many streets in it, is mined like a rabbit warren. The majority of the Press rooms of our papers, are beneath the streets, as an exhibition of the positive fact, that the Press is a fundamental strata of city property and city prosperity too. As vault building is becoming more and more common it is certainly necessary to have good, safe and durable covers. This we think has been fully attained by the cover invented by Mr. W. S. Watkins, of this city, which he calls his SAFETY VAULT COVER, an engraving of which is here presented.

Figure 1.

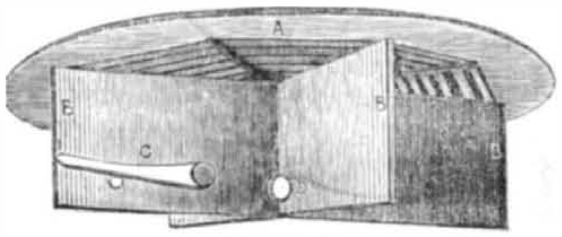


Figure 2.

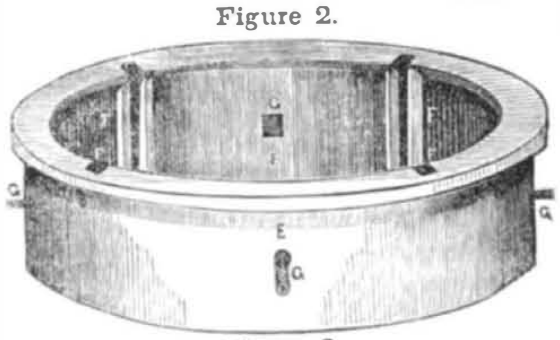


Figure 3.

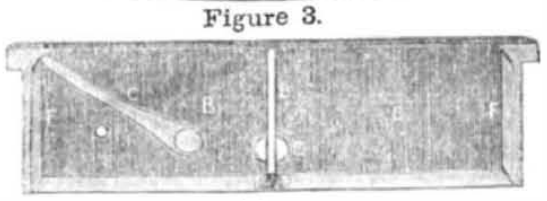
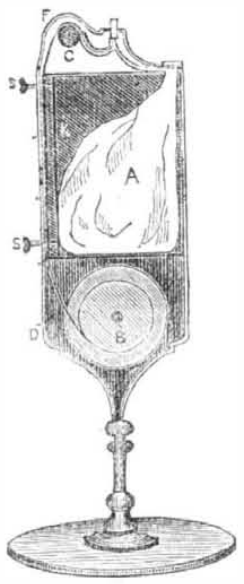


Figure 1, is a view of the cap, or cover.—Figure 2, is a view of the cylinder or collar, and Figure 3 is a sectional view. These covers are generally circular, but they can be made of any shape. The common kind just fit into a circular rim groove, and have but little underhold for firmness. The cap of this cover has four deep flanges designated by B, which fit into perpendicular grooves made to receive them in the collar E, designated by F, fig. 2, and thus secures a firm, solid matching of the cap to the opening of the vault. These grooves may be cut into a stone orifice, or what is better, a cast iron collar. This is the principal feature of the improvement. Fig. 1, is the bonnet of the cover. It is perforated with holes or parallel line openings as may be desired. C, is a sliding pall fixed on the flange, so that when the cover is on, it falls upon the side of the collar, binding the flange B, in the groove F. These palls can easily be raised from above by a small hooked rod thrust through the grate of the bonnet or cap. D, is an opening cut through the *cross* of the four flanges, by which the vault and cover in the old way may be secured below with lock and chain. G, are screws by which to affix the collar in the vault opening. The invention is very simple and good, and it will soon supersede all other vault covers now in use.

Measures have been taken to secure a patent for the combination of the flanges with the grooves, either made in metal or any other material most suitable.

Lard and Oil Lamp.

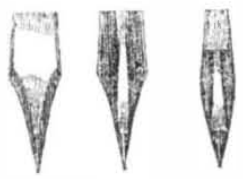
This is the invention of Mr. L. A. Beardsley, of South Edmerstown, N. Y., and exhibits considerable novelty in design and construction



DESCRIPTION.—*A*, is a gum elastic bag, made to fit the place seen in the lamp, and is to hold the lard or oil. B, the spool from which the cotton wick is drawn up the side of the lamp over the roller C through the tubes. S S, are screws which move the slide K, forward forcing the lard or oil nearer the flame. From D to F, are slides or lids which can be opened when the lamp is supplied with wick.

Mr. B. would like to dispose of rights to manufacture these lamps and will give proper attention to any communications directed to him.

Improvement in Gold Pens.



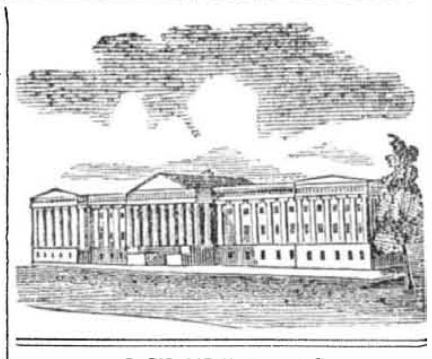
This is a representation of the self-feeding Gold Pens spoken of in the Scientific American of last week. They are designed by Mr. Alfonse R. Cratey, of Brooklyn, N. Y., and present a novel appearance from those in common use. The light line in the centre of the figures represents a silver pallet which lets the ink escape in sufficient quantity for a clean stroke, so that blotting by a new dip of ink from the bottle is entirely prevented, while a considerable supply is kept behind the pallet to ooze out gradually and last for some time.

New Propeller.

Mr. J. N. Smith, of this city, has secured a patent for the combination of a propeller at the stern of vessels with the action of paddle wheels. Thus uniting the propeller with the paddle.

New Hemp Dressing Machine.

Mr. N. L. Williams of St. Louis, Mo., has recently invented a machine which will break and clean 120 lbs. of hemp per hour, in the most perfect manner, with but very trifling waste.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending April 11, 1848.

To Samuel Wright, of Philadelphia, Penn. for improvement in Cane Umbrellas. Patented April 11, 1848.

To Albert V. Hill and Reynolds Arnold, of Hamburgh, N. Y., for improvement in Boot Planes. Patented April 11, 1848.

To Gilbert Geer, of Troy, N. Y., for improvement in Cooking Stoves. Patented April 11, 1848.

To Jesse Taylor, of Auburn, N. Y., for improvement in Smut Machines. Patented April 11, 1848.

To Lathrop S. Bacon, of Leroy, N. Y. for improvement in Cooking Stoves. Patented April 11, 1848. Ante-dated Oct. 11, 1847.

To George B. Foster, of Taunton, Mass., for improvement in Sash Fasteners. Patented April 11, 1848.

To Jackson Sutton, New York City, for improvement in Lamps. Patented April 11, 1848.

To G. H. Horn, (of Boston,) and B H Horn (of New York,) for improvement in Magneto Electrical Machines for giving shocks, (having assigned to D. C. Morehead, of New York.) Patented April 11, 1848.

To Napoleon B. Lucas, of Jersey Co., Illinois, for improvement in Traps for animals. Patented April 11, 1848.

To Anson Smith, of Birmingham, Michigan, for improvement in Grain Separators.—Patented April 11, 1848.

DESIGNS.

To John Burgess, of Troy, N. Y., for Design for Stoves, (having assigned to Gilbert Geer.) Patented April 11, 1848.

To James Wager, of Troy, N. Y., for Design for Stoves. Patented April 11, 1848.

INVENTOR'S CLAIMS.

Alarm for Steam Boilers.

H. B. Fernald, of Boston, Mass. Improvement in Alarms for Steam Boilers. Patented Nov. 13th, 1847. Claim.—Having thus fully described the nature of my improvement in the manner of ascertaining that the water in a steam boiler is so far exhausted as to require replenishing; I do hereby declare that I do not claim the employment of a float for the purpose of merely opening a steam valve, floats having been already used in various ways to operate on safety valves; but what I do claim as constituting my invention, and desire to secure by letters patent is the combining of a float within a steam boiler, with a case into which water is to be admitted through apertures in its lower parts, and with a steam whistle; said float having a valve at its upper end, surmounted by a steam whistle: the whole being constructed and operating in the manner and for the purpose herein fully made known.

Percolating Apparatus.

By C. Augustus Smith of Cincinnatti, Ohio. Improvement in percolating apparatus. Patented 20th Nov. 1847. Claim.—"What I claim as my invention and desire to secure by Letters Patents, is the process of extracting the medical or other valuable properties from vegetable substances, substantially as herein described, viz., by placing the vegetable substances in a percolator, passing a current of steam or vapor into the same, and gradually condensing the steam or vapor while it is diffused amongst the vegetable substances, by the percolator, substantially as herein set forth.

Wrought-iron ought never to be tested beyond half its presumed capacity; nor cast-iron beyond one third, for fear of elongating the former, and of producing permanent injury to the latter.

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NEW YORK, APRIL 22, 1848.

Report of the Commissioner of Patents'

By the Report of the Commissioner of Patents for 1847, for a copy of which we are indebted to Mr. Burke, we learn that no less than fifteen hundred and thirty one applications were made for patents last year, and there were filed no less than five hundred and thirty three caveats. The whole number of patents issued was five hundred and seventy two, including fourteen re-issues, three additional improvements and sixty designs. Five hundred and fifty seven applications have been rejected. Therefore we learn that no less than 402 applications were made for patents which it was impossible for the Patent Office to examine, and no wonder, considering the labor they had to perform. We hope Congress will never again be so culpable in neglecting the rights of inventors. From the great number of rejections—the majority of which were applied for at the very door of the Patent Office, we would call upon the Smithson gentlemen to take into consideration the publication of a work on American Inventions. Such a work would be a mine of wealth to our ingenious and inventive people. Many of them would be saved much trouble of mind and much expense. There is not a week passes, but some invention is brought to us for which to make the application for a patent, and much disappointment is experienced when we say, "this is an old invention and cannot be patented." Some will not believe, but make the application at all hazards, others are grateful for the candid advice, but a work on American Inventions would be the Urim and Thummim to all our inventors.

We are glad to hear that the Patent Office Fund is no less than $207,797 98. There was a surplus over all expenditures last year of more than twenty one thousand dollars—thus shewing the favorable contrast between working (producing,) and fighting and destroying.

The Commissioner in his Report stands up boldly for the rights of the inventor, and he recommends that foreigners may be admitted to the same privileges of patent rights upon the same conditions as our own citizens. At the first glance, this would appear to be a little too liberal, but there is a far sighted sagacity for the benefit of America in the recommendation. In England many an important invention is kept secret for years because the inventor is not able to pay the tremendous expense of getting out a British patent, but let him be able to get out a patent here at a moderate expense, and we predict that in a the course of twenty years the flower of British inventors with all their scientific attainments and knowledge will take up their abode with us, and thus doubly arm our nation in the struggle of progressive invention. This will not injure our own inventors, "invention begets invention," and the end of invention will only be when the human mind ceases to exist. We are glad to see that this Report is printed on better paper than the generality of Congressional Documents, and we hope that the Examiners' Report will be printed on no worse. It is really a shame to see what miserable paper some of the most valuable Congressional Reports are printed on. We have seen some that looked exactly like Scotch snuff and just as irritating to the eyes and olfactory nerves.

Industry.

The United States possesses within her borders all the natural advantages of clime, soil, mineral and commercial greatness, inland seas, endless rivers, mines of inexhaustible stores for fuel, a soil that can feed ourselves and starving millions abroad, and above all an energetic and industrious population. Our mountains might be gold and the valleys silver and the earth might spontaneously yield as luxuriously as the rich savannahs beneath the belted zone of Africa, but if we had not a people intelligent and industrious we would be poor indeed. The great capacity of the United States lies in her people. Industry—downright honest industry, is the wealth of nations. It is indeed true that we are much indebted for our rapid advancement in the race of national greatness to our natural resources, but with an energetic, industrious and intelligent population, no country will be poor.—New England is by no means a fertile land, but her people, that hive of industrious bees, make up in fertile industry and invention, what her soil lacks in productive quality.—She has coined money out of the ice that forms on her ponds and pressed gold out of her flinty rocks, and now with her wealth, she is the road builder of nearly the whole continent. Her capitalists own more stocks in railroads than all the rest of the States put together.—And how did she get those stocks? By downright industry—her natural resources are in her people. All honor then to industry and intelligence and moral worth. We are often pained to hear people talking of the greatness of our country and attributing this to its rocks its rivers, its mountains and valleys. These were in existence before our fathers trod our shores, and the unbroken forest reared its dark shadows over the ground where hundreds of cities and villages now rear their glittering spires and lofty domes. What has made the change? Industry. Without industry the forest would still have frowned in gloomy grandeur where the cheerful smiles of civilized plenty now deck the valley and mountain. Without industry, the wild deer

——Would still
Come down to drink his fill,
At fair Manhattan's silvery rill.

When our citizens speak of our national greatness, never let them forget that all this is the fruit of industry, and it is the anticipation of a just reward for labor that is now peopling the mighty valley of the West—it is in anticipation of a just reward for toil that causes the emigrant to pierce the gorges of the distant Rocky Mountains and pitch his tent on the banks of the Wallamette. All honor then we say again to embrowned industry—an industrious, intelligent, enterprising and moral people, is the real gold and silver of our Republic.

Wisconsin Copper Ore.

The copper ore of Wisconsin is of great importance, but it is at present secondary to the lead interests of that great Territory. This ore occupies the same geological position as the lead ore. It originates in fissures of the cliff limestone. No great masses of native copper have ever been found—five hundred pounds was the largest, a very small piece in comparison with some found in the Lake Superior region. The course of copper vein is from South-east to North-west and exists in veins of continuous and uniform bearing. It is found in some localities in plentiful abundance to repay well the labor of the miner, but skill and capital are much wanting to smelt it. The copper ore of Wisconsin yields nearly a third more than the Welsh ores. The whole of the Western copper ores have to be transported to Boston, Baltimore or Swansea, to be smelted, thus creating an expense which on the face of it appears to be exceedingly absurd. If the Wisconsin ores could be smelted in Illinois where there is abundance of coal, the copper could be produced at a less price than to transport the ores to a greater distance. Considering the great demand for copper, now so extensively used in electrotyping and electro telegraphing, the demand will be still increasing and it would perhaps be no bad speculation for a Company of Smelters with a sufficient capital to establish themselves in the West at an early date.

Another Splendid Steamboat.

A steamboat named the Autocrat, has lately been launched on the Mississippi that beats entirely the Big Maria. Her size may be imagined from the fact that she has carried nearly 4,800 bales of cotton. She has seven large boilers, two powerful engines, and a supply engine or doctor—and the extent of her accommodations for passengers corresponds with her other proportions.; her cabin is the longest and widest on the river, and it is finished in a style of splendor that cannot be excelled.

Last Machines.

Mr. Editor.—I should sincerely desire to know whether Mr. E. Webber's or Wilbur M. Davis's machines for turning irregular patterns have actually been put in operation or not. There never was a more favorable time for the success of some such machine to supersede, at least evade Blanchard's patent. I have been informed that Congress granted a renewal of Blanchard's patent at its last session and that from the 20th of last January to the 20th of January, 1862, it will continue in full force, being the second renewal, extending from the first grant over a period of forty two years, as the first patent dates 1820.

The Last manufacturers in the United States and also Axe Helve manufacturers, will soon feel the biting hand of a keen tax laid upon them, as the patentee has the right to affix a tariff price upon all lasts made in the United States, and I have been informed that the tariff will be upon the regular cash system, "that no manufacturer will be allowed to dispose of any last by *barter*, nor receive any payment except money, nor give longer credit than six months, allowing three per cent for cash down at the time of sale." Also that every manufacturer shall be obliged to keep correct accounts of all lasts made by them and pay Mr. Blanchard or his executives once in three months, a tax of one and a half cents on every last or piece of boot-tree made, during the preceding quarter.

I have also been informed, (yet I do not think such anti-republican conduct can be true) that manufacturers before they can get the right to manufacture must bind themselves to "keep their books open for the inspection of Mr. Blanchard or his agents at all times and that if they fail to perform any of their obligations, he reserves the power to enter and take possession of their machinery without being guilty of any trespass whatever.

Common Law, Mr. Editor, is founded upon common sense, but exparte law is founded upon the principle of feudal assumption of power, the *divine* right of rulers to make any law they choose and to which the ruled must submit in cowed humility. Despots and monarchs have long exercised the *pretence to a right* of conferring special privileges, but no man of common sense and with right views of justice, considers such a *right* any thing but divine or pertaining to the true principles of our federal compact. The Constitution grants to Congress the power of making laws for the encouragement of the arts and sciences. Now no man will doubt but what the late renewal of Blanchard's patent was for this purpose, but it was done by Congress, as the Sprig of Shillelah has it,

"He meets with a friend,
And for love knocks him down."

That is, the renewal of Blanchard's patent will thump so hard upon the heads of our Last Manufacturers that some of them no doubt will invent a machine shortly, that will successfully evade Blanchard's patent, whether the machines referred to above, and noticed some time since in the Scientific American, do so or not. JAMES JOHNSTON.

New York, April 16, 1848,

N. B. It would be interesting to myself, Mr. Editor, and I have no doubt to many of your readers, to know the exact boundary of the power of Congress in conferring special privileges in the several States. J. J.

Railway Sleepers.

In Britain the first Railway sleepers were laid upon stone blocks and by the very rigidness of such a foundation the travelling was not only made more uncomfortable but the carriages and roads were sooner destroyed.—The English rails are now laid upon wooden sleepers resting many of them upon a kind of felt prepared for that purpose. The heavy rail alone is used and the foundation is carefully packed so that travelling is smooth and no jarring—the great annoyance of our roads on this side of the water—but all our new roads are much better than the old.

Cheap Postage.

Scotland with only a population about the same as the State of New York circulated in 1846, three millions more letters than the whole United States.—Reduce the postage say we.

For the Scientific American.

Economy of Power in Cotton Factories.

(*Continued from our last.*)

That no combination of machinery can increase the power of a natural agent, is one of the established axioms in Mechanics. The intervention of machinery between the agent and the body to be moved, gives a particular direction to its force, but in all cases diminishes by friction, its *inherent* power. Hence the most perfect mechanism is that which performs its functions with the least consumption of power. The projector of a cotton mill approximates perfection in his plan in proportion to the number of spindles and looms he can operate with his first mover. The conditions under which this can be most easily accomplished depend upon having the building of a proper width to admit of an economical and convenient arrangement, and placing the machinery consuming the greatest quantity of power as near the first mover as circumstances may admit.

The width of building adopted by our best manufacturers is 50 feet. This gives ample room for mules to be placed parallel with the *ends* of the building if there are no more than 368 spindles in each; if throstles are used 6 rows of frames can be placed parallel with the sides and 8 rows of looms.

By exercising a little ingenuity with a mill of this width and four stories high, there need not be more than *two* main lines of shafting for the whole mill. Great care must be taken when distributing the *weight* upon the several shafts to let each bear its due proportion, for more power is consumed when one is loaded to excess while others have comparatively little to do.

The error of unequally distributing the weight upon the shafts, and of having the machinery that requires to run at the highest speed nearest the main power, are the ones most likely to be made in the planning of cotton mills. The former, from the tendency of all shafting to "crowd" from the driver to the driven causes more friction by the rubbing of collars (or shouldering if collars are not used) against the sides of the hangers, than the mere weight of the shafting revolving on the boxes or bearings of the hangers. And when such machinery as is used in the picking room is placed at the end of the building while the first mover is in the middle, it is apt to suggest to the practical mechanic the idea of a person carrying water pails on the end of a walking cane—certainly the same mechanical disadvantage is experienced in both cases.

W. MONTGOMERY.

(*To be continued.*)

The Surgical Journal, thinking no doubt that it is well to be clear and explicit when addressing common folks, thus describes chloroform: "Chloroform is the pechloryde of formyle—formyle being the hypothetical radical of formic acid." In this view of the case the question naturally arises, what is Chloroform?

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Concrete Walls.

The following plan for making walls of concrete is worthy of attention, in a great number of respects. We are not aware that it has been practised by any person but Rennie, who found it better in some situations than solid blocks.

Mr. Editor :—If we place two flat stones side by side close together with a thin layer of cement between, in a short time they adhere together like one solid stone. Now every particle of sand is a very small stone, and if a large quantity of coarse sand be mixed with a moderate quantity of cement, together with water, and the whole well worked over, so as to insure the thinnest fibre of cement between each particle of sand, I should think that the whole would harden into a solid mass like the sandstone made by Sir James Hall. If this compound be allowed to harden in moulds cubical blocks can be obtained which can be used in building like hewn stone. Now the great object is to use as little cement as possible. We may throw pebbles in the mould as many as we can conveniently get in, first smearing each with the pure cement, and this will lessen the quantity of cement required. The most advantageous way of doing it would be as follows: First mix the cement with the coarse sand, adding a little fine sand thereto and then place in the bottom of the mould a lot of considerably large pebbles, no matter how large; there are now several crevices which may as well as not be filled in with smaller ones; still smaller crevices will now appear, let these be filled with gravel stones, and the mortar be mixed in altogether, and so on to the top. Theoretically, the quantity of cement may be indefinitely diminished, and practically to a very small quantity. Concrete walls may be built up in this way, and irregular stones of immense size worked in, in this way. And if it would harden inside, piers might also thus be built, by raising the outside like a pie crust with hewn stone, these forming a bed or pit in the middle which could be filled up in the same way once the moulds were filled. Yours respectfully,

LYMAN W. DENSMORE.

Rochester, N. Y, April 14, 1848.

Island of Chusan.

The Island of Chusan is seven miles from the mainland, and forty miles distant from the city of Ningpo, and lies in the vicinity of all the great and valuable marts of commerce on the eastern coast. It is 150 miles in circumference. The chief bay, that of Tinghae, is capable of accomodating, in perfect security, a hundred sail of square rigged vessels, and possesses the most admirable facilities for the establishment of docks. Good water abounds, not only at the capital, but throughout the Island. Chusan consists of a succession of hills and dales, which present one unbroken scene of rich cultivation, and exhibit the most lovely scenery. Wheat, rice, tea, grass-cloth, sweet potatoes, cotton, tobacco, and other articles grow in great luxuriance. The island is intersected with roads—not intended for wheeled conveyances—from five to seven feet broad, and paved and flagged throughout; and it is thickly studded with villages. Those who have the best opportunity of forming an opinion on the subject, believe that a hundred well populated and superior villages would be found on it, containing from one to five thousand inhabitants. The whole population is estimated at 270,000. The people are industrious and comfortable, and appear to have no want unsupplied; scarcely a beggar is to be seen, and there is a comparative absence of crime, which reflects no small credit on the Chinese character. Not a single homicide has occurred during the time in which it has been in British occupation; and the inmates of the jail, contributed by the whole island, have rarely exceeded twenty; and the majority have consisted of those who were confined for the illegal sale of its indigenous whiskey, the shamshoo.

The climate vies with that of the most favored regions in the world. There are but three months which can be called hot, June July, and August. In this latter month, the thermometer stands on an average at 83 deg., but sinks at night to 73 deg. The next month it subsides to 74 deg. Then comes winter with its bracing influences, and the ground is covered with hoar frost, and the ice lies half an inch thick. In January and February, the thermometer stands at 20 deg. of Fahrenheit. In March it rises to 28 deg., but the hills continue to be capped with snow and the cheerful fire is kept up until the commencement of June, so that it is only during three months of the year that woolen clothing is unnecessary. All the other places in China, where we have commercial stations are hot, sultry, and unhealthy. The Island furnishes provisions of every description, of the best quality, at a very moderate price. Beef, pork, and poultry, may be obtained in the greatest abundance. Of geese, as large as those in America, there is no lack. Ducks are hatched by steam by thousands, and eggs are less than a halfpenny a piece. Game of every variety easily procured. Bread of good quality, is readily prepared by the Chinese. All kinds of vegetables may be obtained, and fruit grows with great luxuriance. Potatoes have now been introduced, and will probably become an article of great consumption throughout China. Indeed all kinds of provisions may be had at one-half the sum they cost at Hong Kong. It is only for an American want to be known, to be immediately supplied from the Island or the continent. Fishing is universal around the island, and it is calculated that no fewer than 7,000 vessels come from the continent, and remain for three months off Chusan employed in fishing. They are attended with boats filled with ice, in which the fish are packed, and then dispatched to the neighboring coast.

The Bridge over the Ohio at Wheeling, Virginia.

The Wheeling (Va.) Times gives us a description of the splendid Wire Suspension Bridge which is to be constructed over the Ohio river at that city. The length of the span is 1,010 feet from the centre of the towers upon which the structure rests. The strength of a strand of the wire used (No. 10) is capable of sustaining 500 pounds of weight at least. There will be 9,000 strands of the wire. The height of the bridge above low water mark, will be 87 feet. The summit of the eastern tower, will be 253½ feet above low water. The tower will be 60 feet above the bridge and 51 3-4 feet above the tower on the west end. The flooring of the bridge, will be 24 feet wide, with a foot way on each side 3½ feet wide, and a carriage way in the centre, 17 feet wide. The floor will be 93½ feet high at the eastern shore, and gradually fall to 62 feet at the western tower. The flooring will be supported by 12 cables, each 1,380 feet long which will rest upon iron rollers on the towers, and are firmly anchored in the ground or walls at each end. The timber employed in the building will be white pine, except the upper cover of boards which will be white oak. The whole weight of the wood work, will be 250 tons. The entire cost of the bridge will be estimated at $210,000.

Be True to Yourself.

The history of the world, as well as the biography of those who have played a prominent part in its concerns, is worthy of everlasting remembrance. It assures us that it matters but little what form of danger may assail a man, if he be true to himself.

Poverty may lay its chilly hand upon him, and freeze up the brightest fountain of his hope—disappointments may meet him at every step—affliction may strike down those who are nearest to his heart—the foul breath of slander may attempt to sully his name, and tarnish his reputation—still let him be true to himself—let him maintain a stout heart and clear breast—and he will eventually outride the storm. Let those who are struggling with "low birth and iron fortune," remember this truth—and let them remember, that no man can be destroyed by others without fault and weakness in himself.

Cato was the first Roman who attempted to write on diseases and medicine. He wrote a work that might have been called a system of Domestic Medicine, but there was little knowledge of the subject displayed in it.

Musquitoes.

The proper—that is, the technical name for this tribe of insects is the Culicides: they belong to the order of dipterons, or double-winged insects. The common gnat, Culex pipiens, is a delicate, pretty insect, rather less than a quarter of an inch in length. It is furnished with a long, slender proboscis, which projects downwards and forwards, having at its extremity a pair of little sucking discs; this organ forms the siphon up which the creature draws its fill from our life stream. On the sides of this are placed, at different distances, several lancet-like processes, some of which appear simply to cut, while others seem adapted to inject the irritated poison into the minute wound; and these are barbed, and resemble in some respects, the sting of the bee. The "hum" of the gnat, or, as the poet Spencer calls it, "its murmuring small trumpet," is a sound familiar to every ear—to most of us far more familiar than agreeable. This, which is really a pretty and not unpleasant sound itself, were it not that it is a flourish preparatory to an onslaught, is produced by the rapid vibration of its delicate gauze-like wings. The sound has a precise analogue in the deep-toned hum of the "fan" of our blast-furnaces, where the vanes of the blower cut through the air with vast rapidity, and produce, in so doing, the musical notes we hear. The fragile wings of this insect have been estimated by Latour to vibrate at the rate of three thousand times a minute; a rapidity which, when it is regarded as a succession of muscular contractions and relaxations, is something far more wonderful than the most enormous speed to which mechanism was ever driven. The gnat makes its appearance in the greatest numbers at eventime, but its persecutions are by no means confined to that period. It delights chiefly in shady woods, and in moist situations, from whence great hosts may occasionally be observed to issue, and in the vicinity of stagnant pools, which form the nursing places of the young. It has been frequently remarked that it is the female insect which pursues us for blood, and that the male is altogether innocent of the crimes his partner delights to commit. The insect makes its attack in the following manner;—After the flourish as aforesaid, and with a courage equal to all its noise, it flies directly upon its victim, and falls to. Alighting gently upon the surface, it lowers its formidable weapon, gently and gradually thrusting it into the skin until it has pushed home all its lancets. The fluid which produces the subsequent pain in the wound is then injected into it, as has been plausibly supposed, for the purpose of rendering the blood more fluid, and better adapting it to the suctorial capabilities of the insect; and now the thirsty creature takes its fill.—These operations are repeated until it is satisfied, when it flies away, oftentimes becoming gorged and less active, as if completely intoxicated with its potion.

Expedients for defence, against these plagues are frequently almost in vain; but it is our opinion that flax nets loosely twisted are the best that can be used round beds. Our Southern friends will be none the worse of trying the experiment during the coming summer, and this is the reason of our early advice.

Liberty.

We like Burke's ideas of liberty. He says:—"Men are qualified for civil liberty, in exact proportion to their disposition to put chains upon their own appetites, in proportion as their love of justice is above their rapacity; in proportion as their soundness and sobriety of understanding is above their vanity and presumption; in proportion as they are more disposed to listen to the counsels of the good and wise in preference to the flattery of knaves."

Friendship.

When we see the leaves dropping from the trees in the beginning of autumn, just such, think we, is the friendship of the world; while the sap of maintenance lasts, our friends swarm in abundance around us, but in winter of need they leave us alone and naked. He is a fortunate man, that finds a real friend in his need: but more truly happy is he, by far, that hath no need of his aid.

Lukium, or Turkish Plaster.

The impervious and adhesive qualities of this composition, which is remarkably simple and durable, are so efficacious, that although some Taksim tanks are entirely beneath the earth, and thus perpetually exposed to outward infiltrations as well as inward pressure and undoubtedly coveal with the earliest Byzantine monarchs, yet there is no record of their requiring repair, or of their having ever leaked. Water-pipes of burned clay or metal joined with lukium, which, when dried becomes as hard as stone, resist the effects of humidity for ages. The following is the receipt, as now used by the Lou Yolgee (Water-way men:)—Take 1000 pounds of fresh kilned lime, finest quality, reduce to powder, ten quarts of pure linseed oil; and one or two pounds of cotton. Manipulate the lime, gradually mixing the oil and cotton in a wooden trough, until the mixture assumes the consistence of loat-dough. Let it dry and then break it into cakes for store or use. When required for the latter, take a sufficient quantity, moisten it with linseed oil, and with this paste give two or more coatings to the wall or pipes, allowing each coat to dry. Pipes of metal or clay can be hermetically joined by twisting well-carded hemp, saturated with lukium, round the interstices, and making it fast with cord also dipped in the mixture.

The Female Temper.

No trait of character is more valuable in a female than the possession of a sweet temper. Home can never be happy without it. It is like the flowers that spring up in our pathway reviving and cheering us. Let a man go home at night, wearied and worn by the toils of the day, and how soothing is a word dictated by a good disposition! It is sunshine falling on his heart. He is happy, and the cares of life are forgotten. A sweet temper has a soothing influence over the minds of a whole family. Where it is found in the wife and mother, you observe a kindness and love predominating over the natural feelings of a bad heart. Smiles, kind words, and looks characterise the children, and peace and love have their dwelling there. Study then, to acquire and retain a sweet temper. It is more valuable than gold; it captivates more than beauty; and to the close of life it retains all its freshess and power

How to Spoil a Child.

Above all mistakes, is that of supposing that the better nature of a child is to be drawn out and raised into strength, which we should desire to see in the man, by making him pass through a cold and cheerless youth. A system of petty restraints, of privations, of severe looks, and incessant chiding, only results in depraving the feelings, and perverting the reason of a young person. He is, under such circumstances, entirely out of harmony with nature. He is like a flower, which requires light and warmth, placed in a cellar where it can never acquire its proper proportions, color, or vigor. It is quite impossible that a child so treated can ever attain the proper characteristic of a well-constituted man or woman.

Love to the Saviour.

A poor Scottish widow one day came to her parish minister, to be examined for admission to the Lord's Supper. He questioned her respecting the orthodoxy and spirituality of her views, and being dissatisfied with her statements dismissed her from the communion on that occasion: but requested that she would wait on him before the next, when probably her examination might prove more satisfactory. He saw that the aged female wept as she retired; and the big tear that trickled down her furrowed cheek revealed a depth of feeling that her conversation had not made manifest. Her pastor called her back, and asked her why she wept Her reply was eloquent, because from the heart: sublime, because it was simple: "Sir I cannot speak a word for Christ," said she, "but I could die for Christ, so truly do I love him."

A lively Irish writer speaks of a "dish of potatoes roasted on the turf ashes, just bursting their brown surtouts and exposing the delicate whiteness of their mealy bosoms."

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TO CORRESPONDENTS.

"J. L. of Indiana."—Write to Mr. Bentz, Boonsborough, Maryland, he is the inventor of the hulling machine. Those who wish information about it, will be informed if they write to the inventor. We cannot tell the terms of sale.

"J. C H of Mass."—The friction wheel and spring could not be sustained in suit if a patent was granted for it. The very same combination has been long employed in Tanneries for finishing the skins.

"C. H. of S. C."—The water blast has been used here, but now laid universally aside for the fan blower. Of this we have positive information.

"C. & K. of Michigan."—We have answered you by mail.

"E. W. of N. Y."—Mr. Bentz lives in Boonsborough, Md.

"P. F. of Boston."—There is one work on dyeing by Gilroy that is good. Parnell's chemistry may also be useful. No man can get out a patent for the Royal blue. It is too well known. We have some patterns of it very fast and beautiful. The receipts for this color are valuable and not easily procured.

"L. D. V. of N. Y."—Yours has just come to hand.

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"F. F. of St. Louis."—Your letter has just come to hand. See next week's paper.

"S. S. S. of Mass."—Your answer has just come to hand, and we will expect to see the model in a short time.

"E. B. H. of Boston."—We shall soon procure you the full and true information.

"C. & K. of Michigan, and D. W. of Vt."—Your cuts were sent by express from this office last Monday.

"A. T. of Mass."—Hodge's work on the Steam Engine, was sent to your address last Saturday.

"W. H. of South Boston."—We cannot devote any more of our time to giving you advice in regard to your inventions, so long as you are obliged to borrow your neighbor's paper to get the information which we do give.

"P. W. of Ohio."—We have no doubt but what the white of zinc can be obtained here, but where and at what price, we cannot yet tell, but we will in all probability in a few weeks.

"E. B, of Maine."—We have answered you by mail.

"G. G. of Troy."—Yours has just come to hand. We shall attend to your requests.

"L. S. S. of Maine."—We shall pay attention to your side-hill plough.

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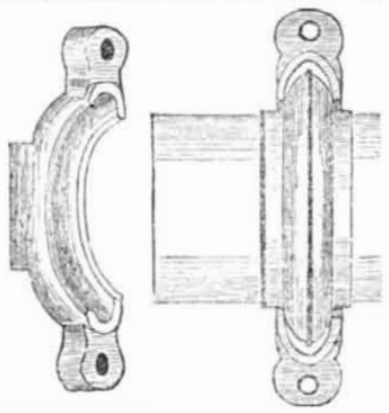

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m25 ROBERT L. STEVENS.

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FOR SALE.—The valuable Mill privilege situated in Roxbury, Mass., formerly known as Wait's Mills, now belonging to the heirs of Richard White, is now offered for sale, together with about 10,000 feet of land, and buildings thereon, including a Grist Mill containing two run of stones, turning shop, dwelling house and barn. The above establishment is now doing a good business, it being a long established stand, and is well adapted for manufacturing purposes. Apply to RICHARD WHITE, on the premises or to JOHN HEATH, Linden Place, Brookline.

Roxbury, Mass., March, 24, 1848. aS 3t*

STEAM ENGINES.

THE Subscriber has in process of manufacture 150 Steam Engines from 5 to 20 horse power, which will be finished by the 1st of May. Also 50 from 25 to 100 horse power, to be finished in June and July. The subscriber has been long engaged in the manufacturing of Stationary Engines, and makes a busi- of that alone. He feels assured that he can make a better article and for less money than any other establishment in the country. The engines are fitted up with heavy iron beds, planed and finished the whole length, with cast steel piston and valve rods. The shafts and connecting rods are of the best wrought iron. The piston is an entirely new article making it doubly secure against leakage and will last for years. They are fitted up with a patent cut-off, of an entire new construction, simple in its arrangement, not liable to get out of order, and can be adjusted to cut off with any length of stroke while the engine is in operation, or thrown off entirely if required. WM. BURDON,

a1 4t* No. 102 Front st, Brooklyn, L. I.

To Mill Owners.

HAVILAND & TUTTLE'S Patent Centre Vent Pressure Water Wheel.—These wheels are now in successful operation in many towns in Maine, Massachusetts, and Rhode Island, and are found to surpass in power and facility of adaptation any water wheel now in use. This wheel was awarded the silver medal at the Fair of the American Institute recently held in New York and a diploma at the Mechanics' Fair in Boston.

The wheels are manufactured and for sale by the FULTON IRON FOUNDRY CO., South Boston, Mass.,—where the wheels can be seen and any information concerning them had.

Patent Rights for different States, Counties, &c. for sale, as above. m25 6m*

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Suspending Solar Lamps, gilt and bronzed.
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Solar Chandeliers, do do 2, 3 4 and 6 lights.
Camphene Suspending Lamps, gilt and bronzed.
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Superior Camphene and Burning Fluid.

November 29, 1847. d18 6m

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Inches.	Cents.	Inches.	Cents.	Inches.	Cnts.
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2 1-2	17	5 1-2	40	9 1-2	73
2 3-4	19	6	45	10	80
3	20	6 1-2	49	10 1-2	85
3 1-2	26	7	57	11	90
3 3-4	28	7 1-2	58	11 1-2	95
4	29	8	63	12	100
4 1-2	35	8 1-2	67		

All Bands of extra thickness will be made by special agreement. Light Bands for Cotton Mills furnished at short notice.

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THOMAS PROSSER, Patentee,

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Johnson's Improved Shingle Machine.

THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth more shingles can be sawed in the same given time than by any other machine now in use.

Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.

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"Lamp Depot."
Nos. 134 and 136 Fulton st., Sun Building.

J. O. FAY has just received from the manufactory of J. G. Moffett, a full and most splendid assortment of Solar Lamps for Parlors, warranted perfect; unequalled in style and beauty of finish—new patterns. the handsomest ever offered for sale, and the cheapest Lamp Store in New York m25 3m*

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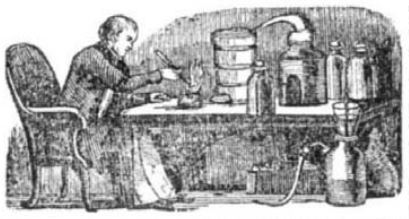


For the Scientific American.

To Distinguish Steel from Iron, and to Soften and Color Steel.

Mr. Editor :—I observe an article in one of your city publications treating upon the above points. I am a working man, and have found the following rules and principles of testing the points on hand. I have found that to distinguish between the two metals, it can be done much more correctly by the *sound* and the *touch*. Relative to the sound, there is as much difference comparatively speaking as there is between copper and brass. Secondly, what I mean by touch, simply is to take a fine cut file, hold the article to be tested in your left hand, the file in the right, draw it gently over the steel or iron—if iron, it sounds *flat* and catches *soft*, if steel it sounds *sharp*, and rubs *hard*. Some may tell us case hardened instruments or tools will act the same as the latter, the best way is to test it ; the file will slide over the case hardened article, *but the sound* resembles that produced on the iron.

To soften steel in small pieces, take a pot filled with ground lime and the ashes of oak wood, when your steel is blood red thrust it into this composition, cover it over and let it remain until it is perfectly cold, then take it out for use. If it is to be turned or drilled, the centres ought to be punched previous to its being put in the fire. This plan is nearly equivalent to the annealing box.

To color steel, this never can be properly done, as some suggest, by polishing the article and putting it upon a hot bar, the color is irregular and of a darkish hue ; but polish it and then have a pot of boiling lead and block tin, of equal parts, plunge the article to be stained in this lead pot, hold it there half a minute, then raise it and with as much dispatch as possible immerse it in cold water.—Try the experiment, and if properly done you will have a blue as clear and beautiful as a Grecian sky.

Yours, &c. Bramble Brae.

Wheeling, Va., April 8, 1848.

For the Scientific American.

Carburet of Sulphur.

This liquid (which by an error in No. 29 Scientific American, is named sulphate of carbon,) was first made by Lampidus by distilling a mixture of pulverized pyrites and charcoal in an earthen retort. It is made by putting fine charcoal into a porcelain tube that traverses a furnace at a slight angle of inclination. To the higher end of the tube a glass retort containing sulphur is luted and to the lower end is attached an adopter tube which enters into a bottle with two tubulars half full of water and surrounded with ice. From the other aperture of the bottle, a bent tube proceeds into the pneumatic trough. When the porcelain tube is brought into a state of ignition, heat is applied to the sulphur which subliming into the tube combines with the charcoal forming the sulphuret of carbon or the carburet of sulphur. (Sulphates are the combinations with the metals.) Unless the carbon, however, is most perfectly calcined no carburet will be obtained. It has been said that Professor Hieburg of Sweden has used this as a substitute for chloroform ; it is, however, a dangerous substance to inhale.

This liquid presents one of the most curious phenomena's in chemistry, for it is the production of two solid bodies and is a fluid which we cannot solidify. It explodes in combination with oxygen by passing an electric spark through it. It dissolves camphor, but does not unite with water and thereby resembles chloroform, and also in its prime equivalents, 15 carbon, 85 sulphur.

To Make Kitchen Vegetables Tender.

To a gallon of peas or beans, either green or dry, add a teaspoonful of saleratus, while cooking, and they will boil tender, much quicker and be of a brighter color.

For the Scientific American.

Painting Top Rollers for Spinning Mules, Frames, Speeders. &c.

Mr. Editor —Proper attention to the clothing of top rollers, is an essential part in the cotton manufacturing. The roller is first painted with white or red lead, then clothed with fine woolen cloth made for the purpose, afterwards the whole is covered over with leather. Regarding the first part, the painting of the roller. Hitherto this has been done generally with a brush, or putting into a small lathe or centre stand. A much simpler and more expeditious method is this : take a piece of roller cloth, tack it light upon a half inch board say 1 foot square, or smaller according to the size of the roller, then take a stout thick brush, paint it over a proper thickness with the red or white lead and roll the roller over it. by having a small piece of wood with a notch in it resting on the centre of the roller. The paint must be spread regular and of a proper thickness, and the result is a saving of paint, the work regular, and more than the double accomplished. The roller when dry will appear rough, consequently the cloth will hold the tighter. B. B.

Diamond Dust.

The demand for diamond dust within a few years has increased very materially, on account of the increased demand for all articles wrought by it, such as cameos, intaglios, &c. Recently a discovery has been made of the peculiar power of diamond dust upon steel ; it gives the finest edge to all kinds of cutlery, and threatens to displace the hone of Hungary. It is well known that in cutting a diamond (the hardest substance in nature) the dust is placed on the teeth of the saw—to which it adheres, and thus permits the instrument to make its way through the gem. To this dust, too, is to be attributed solely the power of man to make brilliants from rough diamonds; from the dust is obtained the perfection of the geometrical symmetry which is one of the chief beauties of the mineral, and also that adamantine polish which nothing can injure or effect, save a substance of its own nature. The power of the diamond upon steel is remarkable : it is known to paralyze the magnet in some instances. A diamond cast into a crucible of melted iron converts the latter into steel.

Blasting By Potassium.

To effect this, a tin case must be provided, closed at both ends, except a small hole in the centre of one. Fill this with gun-cotton, or gun-powder, if the latter fasten a piece of pasteboard, open at one end, very shallow, and wide enough to cover the hole in the largest cylinder or base, in this, put a piece of potassium, invert it over the hole in the larger case, and fasten it on. The case thus prepared, with weights attached, is carried down by a diver, and placed in a proper situation, in half an hour, the water will soak through the pasteboard top, come in contact with the potassium, immediately inflame, and cause the explosion of the case.

Such is the plan, but for certainty it has many objections.

Khorassan or Turkish Mortar.

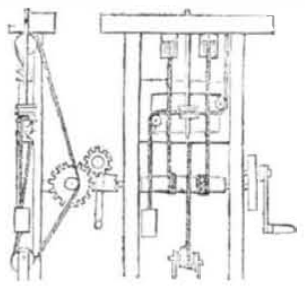
Khorossan is used for the construction of mosques, reservoirs, and other buildings requiring extraordinary solidity. It is composed of one-third bricks, and tiles pounded to the consistency of road scrapings, and two-thirds of finely-sifted lime, with the necessary quantity of rain-water. When employed, the mortar is laid on in layers of from five to six inches in thickness between each range of bricks or stones, the latter being dipped or sprinkled with water, to augment the adhesion. Khorassan still in common use, was employed by the early Byzantines, as is proved by the remnants of their cisterns and churches. It was borrowed from the Arabs, who took it from Persians, and called it Dakik ul Karf, (potter's dust.)

Ladies' Waists.

Women ought to measure from twenty-seven to twenty-nine inches round the waist, but most females do not permit themselves to grow beyond twenty-four ; thousands are laced to twenty-two, some to less than twenty inches; and thus by means of wood, whalebone, and steel, the chest is often reduced to one half its proper size.

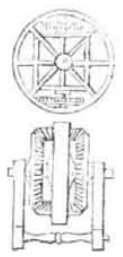
MECHANICAL MOVEMENTS.

Gun Boring.



This is a front and side view of a French machine which was used some years ago for boring rifle gun barrels. Motion being given to the handle or winch, the sliding carriage which moves perpendicularly in the side guides is elevated or lowered by the inclined rope in the left hand figure, at the same time that a rotary motion is given to the perpendicular boring tool by another band passing round the horizontal warve and held tight by means of the weight.

The Dinanometer.



This is a machine for determining the required amount of power to give rotary motion to any given piece of mechanism. It was invented by Mr. J. White of England, more than half a century ago. The upper figure shows a hooped piece carrying two bevels and revolving freely on the middle of the horizontal shaft in the figure below. On the horizontal shaft are seen two bevels which gear into those carried by the hoop piece, the one of these is fast to the horizontal shaft and the other runs loose. Supposing then the hooped piece in the lower figure to be held stationary and motion to be given to either of the side wheels, it will be imparted through the horizontal bevels to the opposite wheel ; but on the other hand, if the hooped part is not held stationary, it will rerolve on the shaft along with the wheel which is put in motion and the amount of power required to hold the hooped piece stationary will be the same as the amount transmitted from the first wheel. Thus a band attached to the periphery of the hoop will indicate the power by the amount of weight required to keep it stationary.

Cure for Hydrophobia.

Desirous to do all in our power to mitigate the fearful effects of this almost supernatural disorder, we insert every prescription that we find, upon the principle that " in the multitude of counsellors there is (a chance of) safety." The following cure of hydrophobia is recorded as having occurred in the native hospital at Calcutta ; From a patient under the aggravated symptoms of that disease 40 ounces of blood were taken, which produced immediate relief. The rabid symptoms re-appeared in about two hours, blood was again let, till he fainted, which happened after eight ounces were taken. After the second bleeding, the disorder did not return. But considerable quantities of calomel and opium were administered ; and he was discharged in a fortnight.

[We believe that the hydropathic system is the best to treat hydrophobia with. Who can explain or give a reason for the dread a person affected with hydrophobia has to water ? No one. But may not this be a key to the cure.

Curious Experiments in Managing Pigs.

The following experiment has been made by a gentleman of Norfolk :

Six pigs of nearly equal weight, were put to keeping at the same time, and treated the same, as to food and litter for seven weeks. Three of them were then left to shift for themselves, as to cleanliness : the other three were kept as clean as possible, by a man employed for the purpose, with a curry comb and brush The last consumed in seven weeks, fewer peas by five bushels than the other three, yet weighed more when killed, by two stone and four pounds upon an average.

Concrete.

This is the name of a mass of sand and small stones cemented together by lime, or some other cement. It would be well if the foundations of all buildings, when there is not solid rock, rested upon a strata of cement concrete. Seventy parts of fine stones, twenty parts of sharp river sand and ten parts of good lime mixed with water and grouted in. A good plan is to mix the lime dry with the other material and then throw water over them to make a perfect mixture by turning over. There is about one-fifth contraction of the concrete, in reference to the bulk of its ingredients before mixture. This would be a fine substrata for plank roads as well as block pavement.

To Transfer Engravings to White Paper.

Place the engravings for a few seconds over iodine vapor. Dip a slip of white paper in a weak solution of starch, and when dry, in a weak solution of oil of vitrol. When dry, lay the slip upon the engraving, and place them for a few minutes under a press. The engraving will be thus reproduced in all its delicacy and finish. The iodine has the property of fixing on the black parts or ink of the engraving, and not on the white. This important discovery is yet in its infancy.—*Builder*.

Cullodion.

This new preparation, recently invented by Mr. S. L. Bigelow, of Boston, and noticed in a former number, for the healing of wounds, consists of a solution of gun-cotton in ether. The cotton is entirely dissolved, and the preparation seen in a phial is clear as water. When applied to a cut or wound, it hardens into a flesh-colored water-proof coating. As the coating dries, it contracts, and thus draws the lips of the wound close together, protecting it from irritation, and leaving the least possible scar.

Ether and Chloroform.

Dr. Simpson, of Scotland, has computed that of 300 surgical operations performed with ether and chloroform, fewer proved fatal than is usual in the same cases without these agents Of 1088 cases of amputation in the thigh, with anæsthetic agents, 44 in 100 died ; out of 135 cases, with ether and chloroform 33 only died, or 24 in 100.

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